

Advanced Algebra Exam Review

Name \_\_\_\_\_

Simplify.

1.  $(6 + 3i) + (4 - 5i)$

2.  $(3i)(-8i)$

3.  $(-2 - 5i) - (7 + 4i)$

4.  $(3 + 3i)(2 - 5i)$

5.  $6 + \sqrt{-16}$

Factor completely.

6.  $6x^2 + 18x$

7.  $3x^2 - 12x + 3$

8.  $x^2 - 12x + 24$

9.  $t^2 + t - 20$

10.  $x^2 - 64$

11.  $81a^2 - 25b^2$

12.  $x^4 - 36$

13.  $5x^2 + 11x - 12$

Solve by factoring.

14.  $16x^2 - 81 = 0$

15.  $x^3 - 4x^2 = 45x$

Solve by using the Quadratic Formula. Round the solutions to the nearest hundredth.

16.  $2x^2 = 5x + 9$

Find the discriminant.

17.  $5x^2 - 3x + 1 = 0$

18. Complete the chart. (See p. 288.)

Value of the discriminant

Type & # of Solutions for  
 $ax^2 + bx + c = 0$

Sketch a graph to  
illustrate the the  
solutions

Simplify.

1.  $(6+3i) + (4-5i)$

$(10-2i)$

2.  $(3i)(-8i)$

$-24i^2$   
 $24$

3.  $(-2-5i) - (7+4i)$

$-9-9i$

4.  $(3+3i)(2-5i)$

$6-15i+6i-15i^2$   
 $6-9i+15$   
 $21-9i$

5.  $6+i-16$

$6+i-16$   
 $-10+i$

Factor completely.

6.  $6x^2+18x$

$6x(x+3)$

7.  $3x^2-12x+3$

$3(x^2-4x+1)$

8.  $x^2-12x+24$

$(x-6)(x-4)$

9.  $x^2+1-20$

$(x+5)(x-4)$

10.  $x^2-64$

$(x-8)(x+8)$

11.  $81a^2-25b^2$

$(9a-5b)(9a+5b)$

12.  $x^4-36$

$(5x-4)(x+3)$

13.  $5x^2+11x-12$

$(5x-4)(x+3)$

$(x^2-6)(x^2+6)$

Solve by factoring.

14.  $16x^2-81=0$

$(4x-9)(4x+9)=0$

$x = \frac{9}{4}, x = -\frac{9}{4}$

15.  $x^3-4x^2=45x$

$x(x^2-4x-45)=0$

$x(x-9)(x+5)=0$

$x=0, 9, -5$

Solve by using the Quadratic Formula. Round the solutions to the nearest hundredth.

16.  $2x^2=5x+9$

$2x^2-5x-9=0$

$a=2, b=-5, c=-9$

$x = \frac{5 \pm \sqrt{25-4(2)(-9)}}{4}$

$x = \frac{5 \pm \sqrt{25+72}}{4}$

$x = \frac{5 \pm \sqrt{97}}{4}$

$x = 3.71$   
 $x = -1.21$

Find the discriminant.

17.  $5x^2-3x+1=0$

$a=5, b=-3, c=1$

$b^2-4ac$   
 $9-4(5)(1)$   
 $-11$

18. Complete the chart. (See p. 288.)

Value of the discriminant

Type & # of Solutions for  $ax^2+bx+c=0$ 

Sketch a graph to illustrate the solutions